

FIG. 1

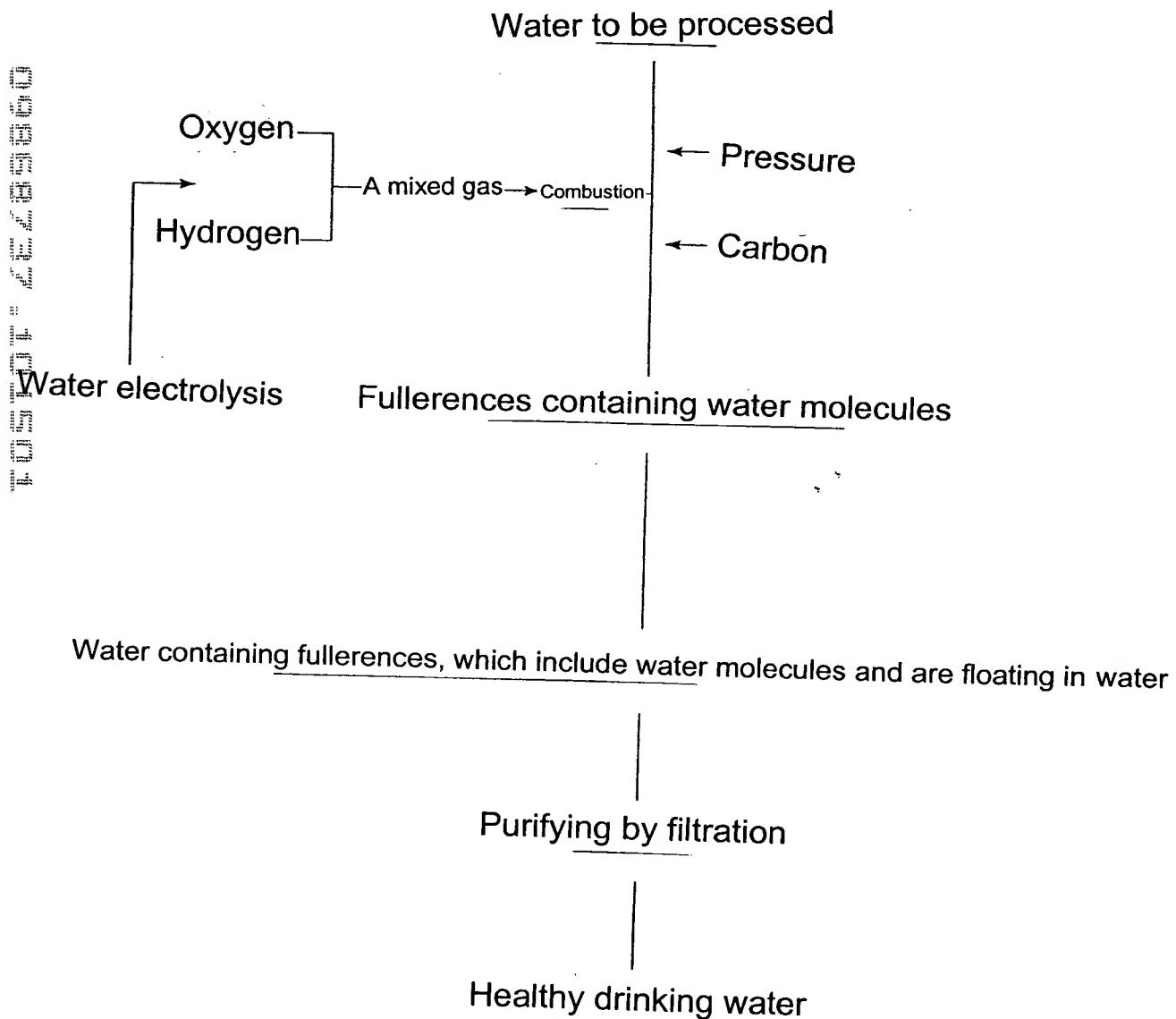
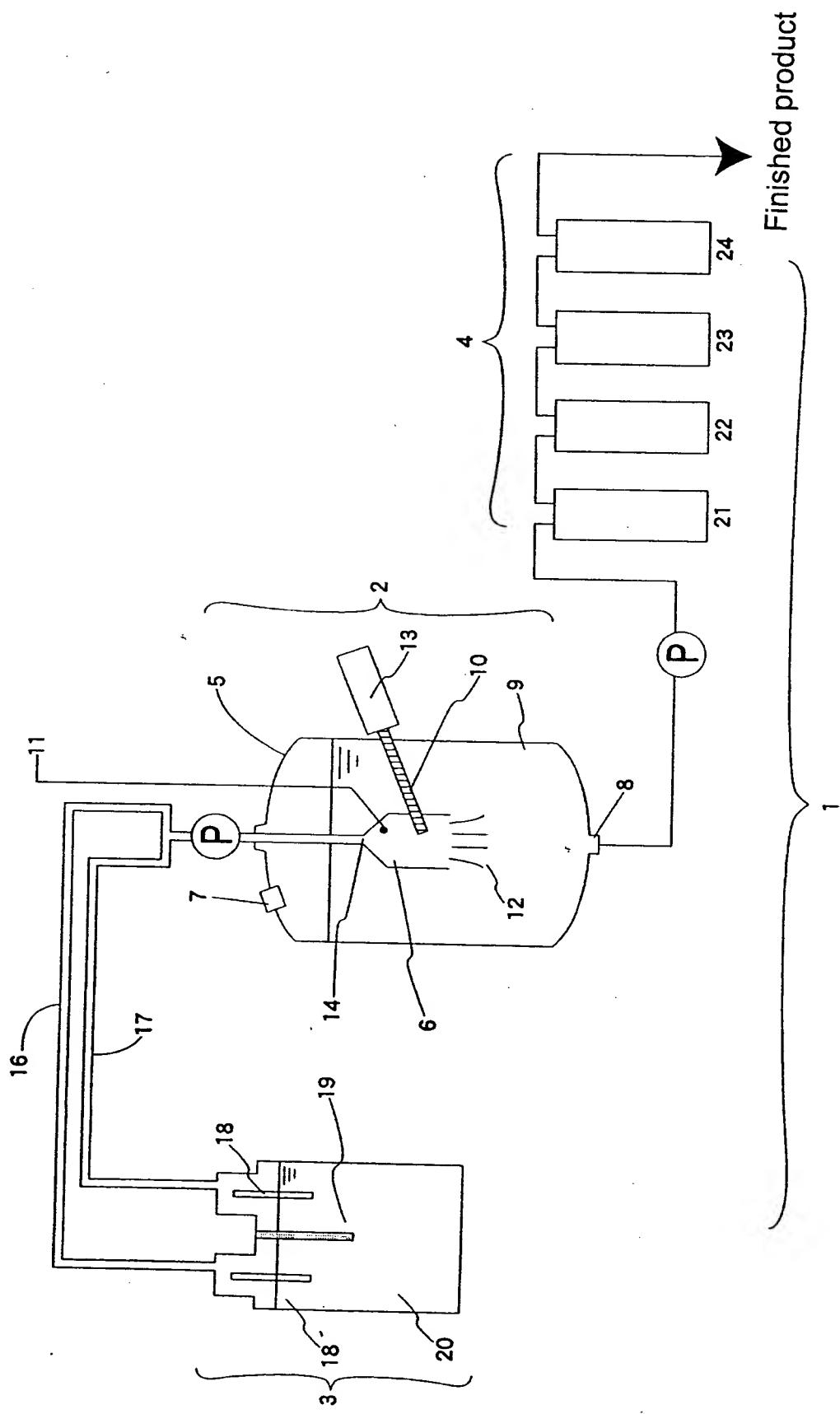
A flow chart of producing water containing fullerenes

FIG. 2



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FIG. 3

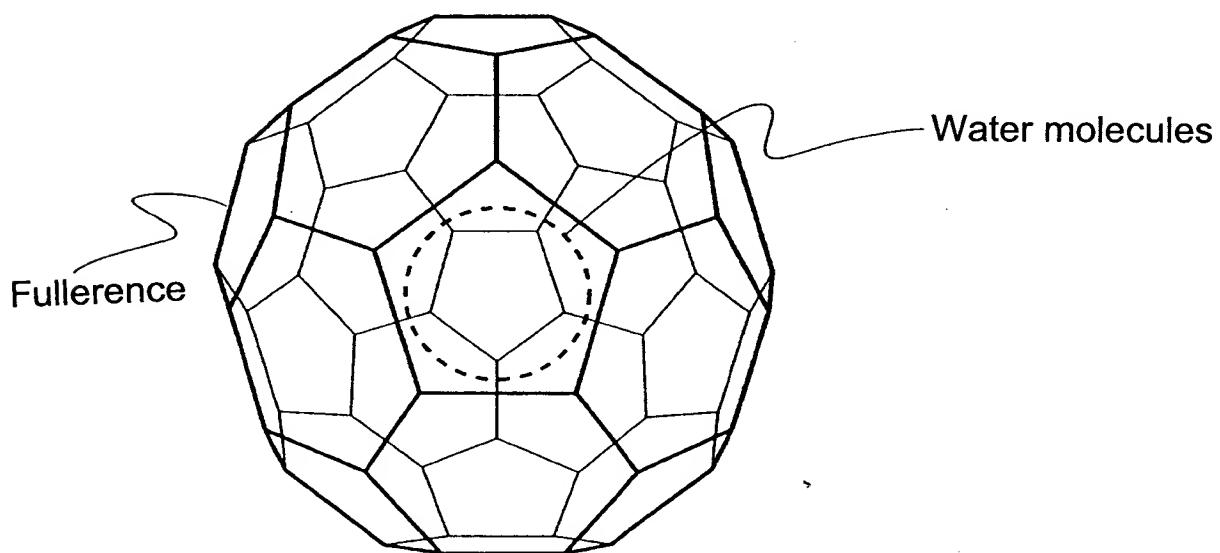


FIG. 4

Various Properties of C₆₀ (prepared based on a table from Chemistry, 46, 830, 1990)

Properties (Physical Quantity)	Measured Value, etc.	Properties (Physical Quantity)	Measured Value, etc.
Molecular weight:	720.66	Electron affinity:	2.65±0.02 eV
No. of molecules:	720	Reduction potential (E ^{1/2} vs Fc/Fc ⁺), acetonitrile/toluene, (Et ₄ N)BF ₄ (legible), -10°C:	-0.98, -1.37, -1.87, -2.35, -2.85, -3.26 (V)
Molecular structure:	Frustum icosahedron (1 _n), Diameter: ~7.1A C-C bond shared by two six-membered rings 1.391A C-C bond forming a five-membered ring $\delta = 143.27 \text{ ppm}$	Crystal structure: P ₃ , Z=4, a=14.041 χ (5K) Face-centered cubic system (249K or more) Fm 3, Z=4, a=14.17±0.01 χ (300K) Distance between the center of adjacent molecules: ~10.0 χ	Simple cubic system (249K or less)
¹³ C-NMR spectrum (C ₄ D ₆)	527.4, 576.4, 1182.4, 1428.5	Density:	1.729 g/cm ³ (5K, calculated value)
Infrared adsorption spectrum (KBr pellet)/cm ⁻¹	527.1, 570.3, 1169.1, 1406.9	1.682 g/cm ³ (300K, calculated value)	(5.5±0.5)×10 ⁻² GPa ⁻¹
Infrared emission spectrum (vapor-phase, 850±100°C)/cm ⁻¹	273(s), 437(m), 496(s), 710(m), 774(m), 1099(w), 1250(w), 1428(m), 1470(vs), 1575(m)	Compressibility (0~20GPa):	>700°C
Raman spectrum (thin film)/cm ⁻¹	211(5.11), 227(sh, 4.91), 256(5.24), 328(4.71), 390(3.52), 403(3.48), 492(sh, 2.72), 540(2.85), 568(2.78), 590(2.86), 598(2.87), 620(2.60)	Melting point:	~4.83kJ/mol
Visible ultraviolet spectrum (hexane solution, log ε in parentheses)/nm	No observation	Heat of transition (249K):	~9.58±0.31 kJ/mol
Fluorescence spectrum (toluene solution, at room temp.)/nm	No observation	Heat of sublimation:	~9.58±0.31 kJ/mol
Triplet energy (toluene solution)	1.56±0.03 eV (8.60±0.14 kJ/mol)	Conductivity (at room temp.):	<10 ⁻⁹ Scm ⁻¹
Ionization potential	7.61±0.02 eV	Molar magnetic susceptibility	-(260±20)×10 ⁻⁸ emu/mol
		K ₃ C ₆₀ (18), Rb ₃ C ₆₀ (28,30), Rb ₂ CsC ₆₀ (31), RbCs ₂ C ₆₀ (33), K ₂ CsC ₆₀ (24), Na ₂ CsC ₆₀ (12), Na ₂ RbC ₆₀ (s.5), Na ₃ KC ₆₀ (2.5), Li ₂ CsC ₆₀ (12), Ca _x C ₆₀ (8.4), Sn _x C ₆₀ (12)	TDAE _{0.55} C ₆₀ 16.1K
		Curie temp. of ferromagnetic salt:	* Curie temperature: Temperature at which a paramagnetic substance changes to a ferromagnetic substance when it is cooling down. TDAE indicates tetrakis(dimethylamino)ethylenne.

(Source: K. Tanigaki & others, *Fullerene*, Sangyo-tosho, Oct. 27, 1992, P. 16)

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